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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,899	09/25/2003	John C. Baumhauer JR.	P00747-US-01 (15462.0002)	6011
7590 Alexander D. Forman ICE MILLER One American Square Box 82001 Indianapolis, IN 46282-0002			EXAMINER LAO, LUN S	
			ART UNIT 2615	PAPER NUMBER
			MAIL DATE 06/05/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/670,899

Applicant(s)

BAUMHAUER ET AL.

Examiner

Lun-See Lao

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 9, 10, 13, 14, 17, 18 and 21-23 is/are rejected.
- 7) ☒ Claim(s) 7, 8, 11, 12, 15, 16, 19 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 12-15-2003.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### *Introduction*

1. This communication is responsive to the applicant's election filed on 04-12-2007. Applicants have elected Species I, comprising claims 1 and 3-23, and the election is made with traverse. Claims 1 and 3-23 are pending.

### *Drawings*

2. The drawings are objected to because figures 1-6 are handwriting, formal drawings are required. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Cezanne (US PAT. 5,473,701).

Consider claim 1 Cezanne teaches that a microphone system (see fig.3) for communication devices comprising:

- a. a first omnidirectional microphone element (10);
- b. a second omnidirectional microphone element (12) positioned near the first microphone element (10); and
- c. a signal flow processor (14,16, 20, 25, 30, 35, 40, 45, 50, 55, 60 elements can be considered as a signal flow processor) electrically connected to the first and second microphone element (10,12);

wherein the signal flow processor (14, 16, 20, 25, 30, 35, 40, 45, 50, 55, 60 elements can be considered as a signal flow processor) provides an electrical time delay (30) to the first microphone element (10) and a compatible amplitude gain (16) to the second microphone element (12) and wherein the signal flow processor subtracts (40,45,60) the outputs of the first and second microphone elements (10,12) to create a null that reduces external acoustic coupling (see col. 4 line 37-col.5 line 67).

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Consider claim 13 Cezanne teaches that Cezanne teaches that a method for producing a null towards an acoustical driver (see fig. 3) of a communication device for reducing external acoustic coupling in the communication device, the method comprising the steps of:

- a. providing a microphone system for telecommunications having
  - (i) a first omnidirectional microphone element having a first output (10); and
  - (ii) a second omnidirectional microphone element (12) positioned near the first microphone element (10), the second microphone element (12) having a second output;
  - (iii) a signal flow processor (14, 16, 20, 25, 30, 35, 40, 45, 50, 55, 60 elements can be considered as a signal flow processor) electrically connected to the first and the second microphone elements (10,12);
- b. providing an electrical time delay (30) to the first output (10);
- c. providing an amplitude gain (16) to the second output (12); and
- d. subtracting (40, 45, 60) the first output from the second output (see col. 4 line 37- col.5 line 67).

Consider claim 3 Cezanne teaches the microphone system (see fig.3) of a first input sound port inherently (because the microphones needs a sound port to pick the sound) leads into the first microphone element (10) and a second input sound port leads into the second microphone element (12).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cezanne (US PAT. 5,473,701).

Consider claim 4 Cezanne teaches that the first and second input sound ports (see fig.3 (10,12)) each comprise a sound input port, but Cezanne does not explicitly teach Cezanne that the first and second input sound ports each comprise a sound input port of a mobile phone.

However, it is well known in the art (official notice is taken) that the first and second input sound ports each comprise a sound input port of a mobile phone.

Therefore, it would have obvious that the microphone array system as taught by Cezanne could have used a mobile phone comprising the first and second input sound ports as claimed to provide a communication system to the user.

7. Claims 5, 9,14 and 17-18, 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cezanne (US PAT. 5,473,701) in view of Vartiainen (US.PAT. 6,275,592).

Consider claim 5 Cezanne does not explicitly teach the microphone system of the mobile phone comprises a receiver positioned and located closer to the first input sound port than the second input sound port.

However, Vartiainen teaches the microphone system of the mobile phone comprises a receiver positioned (see fig.7 (73)) and located closer to the first input sound port (75) than the second input sound port (72 and see col. 7 line 12-45).

Therefore, it would have obvious to one of ordinary skill in the art the time the invention was made to combine the teaching of Vartiainen and Cezanne to provide a sound source (such as a speaker) so that the user can hear the audio sound.

Consider claim 9 Cezanne does not explicitly teach that the microphone system of the first and second input sound ports each comprise an input sound port of a speakerphone, wherein the speakerphone comprises a loudspeaker with its center located and positioned closer to the first input sound port than the second input sound port.

However, Vartiainen teaches that the microphone system of the first and second input sound ports (see fig.7 (75,72)) each comprise an input sound port of a speakerphone, wherein the speakerphone comprises a loudspeaker (73 (earphone)) with its center located and positioned closer to the first input sound port (72) than the second input sound port (72 and see col. 7 line 12-45).

Therefore, it would have obvious to one of ordinary skill in the art the time the invention was made to combine the teaching of Vartiainen and Cezanne to provide a sound source (such as a speaker) so that the user can hear the audio sound.

Consider 14 Cezanne does not explicitly teach that the method further comprises the step of providing a mobile phone having a first input sound port leading into the first microphone element, a second input sound port leading into the second microphone element, and wherein the acoustical driver comprises a receiver positioned and located closer to the first input sound port than the second input sound port.

However Vartiainen teaches that the method further comprises the step of providing a mobile phone (see fig.7) having a first input sound port leading into the first microphone element (72), a second input sound port leading into the second microphone element (75), and wherein the acoustical driver (73) comprises a receiver positioned and located closer to the first input sound port (75) than the second input sound port (72 and see col. 7 line 12-45).

Therefore, it would have obvious to one of ordinary skill in the art the time the invention was made to combine the teaching of Vartiainen and Cezanne to provide a sound source (such as a speaker) so that the user can hear the audio sound.

Consider claim 18 it is essentially similar to claim 14 and is rejected for the reason stated above apropos to claim 14.

Consider claims 17 and 21 Vartianinen teaches that the method further comprises the step of calculating the electrical time delay (see fig.3 and see col. 5 line 29-50) and compatible amplitude gain by driving the receiver with an electrical impulse and measuring the impulse response at both the locations of the first and second microphone element outputs (see fig.7 (75,72) and see col. 7 line 12-67).



Consider claims 22-23 Vartiainen teaches that the electric time delay and compatible amplitude gain are each equal to a constant value with a finite number of discrete sub-bands across the communications band (see fig.3 and see col. 5 line 29-50).

8. Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Cezanne (US PAT. 5,473,701) as modified by Vartiainen (US PAT. 6,275,592) as applied to claims 1, 2-5, 9 and 13, and further in view of Sasaki (US PAT. 5,471,538 hereinafter Sasaki).

Consider claim 6 Cezanne and Vartiainen do not explicitly teach that the signal flow processor makes the amplitude gain equal to unity and the time delay is selected from a range between 0 and a value equal to  $d^2/c$ , wherein the variable "d2" equals the distance between the first and second sound ports and the variable "c" equals approximately the speed of sound.

However, Sasaki teaches that the signal flow processor makes the amplitude gain equal to unity and the time delay is selected from a range between 0 and a value equal to  $d^2/c$ , wherein the variable "d2" equals the distance between the first and second sound ports and the variable "c" equals approximately the speed of sound (see4 figs 7-9 and see col. 9 line 28-col. 7 line 68).

Therefore, it would have obvious to one of ordinary skill in the art the time the invention was made to combine the teaching of Sasaki to the teaching of Cezanne and Vartiainen to more accurate calculating time delay with amplitude gain control for the output signals.

Consider claim 10 it is essentially similar to claim 6 and is rejected for the reason stated above apropos to claim 6.

***Allowable Subject Matter***

9. Claims 7-8, 11-12 and 15-16, 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Amendment***

10. Applicant's election with traverse of claims 1 and 2-24 REMARK Paper No. 4 is acknowledged. Applicant' argued that the restriction is not proper. This is not found persuasive because of the following reason. This application contains claims directed to the following patentably distinct species of the claimed invention: Species I, claims 1 and 3-23 are drawn to a microphone system comprising: a first microphone element; a second microphone element positioned near the first microphone element to provide an audio signal (see fig.1 ); Species II, claim 24 drawn to a microphone system for telecommunications having a first microphone element having a first output to a fourth microphone element having a fourth output (see fig.6); Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no generic claims.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different invention usage such as Species I claims 1 and 3-23 and Species II claim 24, restriction for examination purposes as indicated is proper.

Regarding the applicant argued claim 25 (see remark page 5 second paragraph).

The examiner responds that . The examiner can't find claim 25 on the preliminary amendment filed on 11-12-2003.

The requirement is still deemed proper and is therefore made FINAL.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered to applicant's disclosure. Matouk (US PAT. 5,625,684) is recited to show other related microphone system for communication devices.

12. Any response to this action should be mailed to:

Mail Stop \_\_\_\_ (explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Facsimile responses should be faxed to:  
**(571) 273-8300**

Hand-delivered responses should be brought to:  
Customer Service Window  
Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (571) 272-7501 The examiner


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can normally be reached on Monday-Friday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao, Lun-See  
Patent Examiner  
US Patent and Trademark Office  
Knox  
571-272-7501  
Date 05-23-2007



**VIVIAN CHIN**  
**SUPERVISOR, PATENT EXAMINER**  
**TECHNOLOGY CENTER 2600**